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BOSTON, MA 02110

EXAMINER
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AL NAZER, LEITH A

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/068,433

Applicant(s)

PO ET AL.

Examiner

Leith A Al-Nazer

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .



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## DETAILED ACTION

### *Drawings*

1. This application has been filed with informal drawings that are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first embodiment of the invention, as specified in independent claim 1, must be shown or the feature(s) canceled from the claim(s). Claim 1 specifies a fiber grating in a second fiber, wherein a first fiber is devoid of a fiber Bragg grating. However, No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Specification*

3. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

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The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

4. The abstract of the disclosure is objected to because it is not descriptive and does not state that which is new in the art to which the invention pertains. Correction is required. See MPEP § 608.01(b).

#### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claims 1, 21, and 29 recite a “system” in their respective preambles.

However, the term “system” is vague and indefinite and fails to particularly point out the subject matter which applicant regards as the invention. Applicant discloses a Raman fiber laser system, and therefore, the claim preamble should state as such.

Claim 14 recites “the second predetermined energy”. There is insufficient antecedent basis for this limitation in the claim.

Claim 16 recites “wherein the second WDM is between the energy source and the third fiber Bragg grating”. The word “between” does not provide sufficient structural relationships/connections to properly conform the laser apparatus.

Claim 17 recites “the third fiber Bragg grating”. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 recites “wherein the WDM is between the energy source and the second fiber Bragg grating”. The word “between” does not provide sufficient structural relationships/connections to properly conform the laser apparatus.

Claim 29 recites “Wherein the space between the second pair of gratings is devoid of a grating in the third pair of gratings”. This phrase is confusing, and Examiner is unsure what is being claimed.

### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122 (b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language; or the publication under the treaty defined in section 351(a) of this title, of an international application designating the United States shall be deemed a publication under section 122(b), except as provided in sections 102(e) and 154(d) of this title.

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8. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Islam et al '006.

With respect to claim 1, Islam teaches an energy source (26); a first fiber coupled to the energy source (figure 2); a second fiber (30); a WDM (28) capable of transferring the pump energy from the first fiber to the second fiber; a fiber Bragg grating (50) in the second fiber; wherein the first fiber is devoid of a fiber Bragg grating.

With respect to claims 2 and 3, Islam teaches the second fiber being in the shape of a loop (figure 2).

With respect to claim 4, Islam teaches a predetermined wavelength comprising energy having a Stoke shifted wavelength (column 10, lines 23-32).

With respect to claims 5-9, Islam teaches a Stoke shifted wavelength having an order of one, two, three, four, and five (column 10, lines 23-32).

With respect to claim 10, Islam teaches a configuration comprising a second fiber Bragg grating in the second fiber (50 and 52 in figure 5).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 11-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Islam '393 in view of Chang et al.

Claim 11 requires a third fiber, a second WDM, and a second fiber Bragg grating, the second fiber grating being in the third fiber, the second WDM being capable of transferring pump energy between the first and third fibers (figure 2). Islam and Chang are analogous art because they are from a similar problem solving area: Raman amplifiers. Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to combine the third fiber, second fiber grating, and second WDM of Chang with the system as taught or suggested by Islam to obtain the invention as specified in claim 11.

With respect to claims 12-14, Chang shows the third fiber being in the shape of a loop (figure 2).

Claim 15 requires a third Bragg grating being placed in the first fiber. Chang teaches such a setup (figure 2).

Claim 16 requires the second WDM be between the energy source and the third fiber Bragg grating. Chang teaches such a configuration (figure 2).

Claim 17 requires a second fiber Bragg grating capable of substantially reflecting the pump energy. Islam teaches a second fiber Bragg grating (50 and 52 in figure 5).

Claim 18 requires the WDM be between the energy source and the second fiber Bragg grating. Islam teaches such a configuration (figure 5).

Claims 19 and 20 require a coupler and a third fiber, the coupler being capable of transferring the predetermined energy from the second fiber to the third fiber. Chang teaches a WDM which couples a second and third fiber (figure 2).

With respect to claim 21, Islam teaches an energy source; a fiber coupled to the energy source, the fiber having a loop-shaped portion, a first non loop-shaped portion, and a second non loop-shaped portion (figure 5); and a first fiber Bragg grating (50) in the first non loop-shaped portion of the fiber. Claim 21 requires a second fiber Bragg grating in the second non loop-shaped portion of the fiber. At the time of the invention, it would have been obvious to one having ordinary skill in the art to add a second fiber Bragg grating to the system taught or suggested by Islam. The motivation for doing so would have been to provide means for creating a resonant cavity and reflecting back portions of the optical signal.

With respect to claims 22 and 23, Islam teaches a third fiber Bragg grating (50 or 52) in a second non loop-shaped portion of the fiber (figure 5).

With respect to claim 24, Islam teaches a coupler (28) and a second fiber (figure 2).

With respect to claims 25-28, Islam teaches a predetermined wavelength comprising energy having a Stoke shifted wavelength (column 10, lines 23-32).

12. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sorin et al '791.



With respect to claim 29, Sorin teaches an energy source; a fiber coupled to the energy source; and six Bragg gratings (figure 3). Claim 29 requires a first, second, and third pair of Bragg gratings in the fiber, each being reflective to a specific order of Stoke shifted energy. Sorin teaches tuning of the Bragg gratings to reflect certain wavelengths (column 6, lines 33-50). At the time of the invention, it would have been obvious to a person having ordinary skill in the art to take the system taught by Sorin and create three "pairs" of Bragg gratings from the six Bragg gratings provided by Sorin. The motivation for doing so would have been to create three optical resonant cavities, each resonating at a different wavelength.


***Communication Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leith A Al-Nazer whose telephone number is 703-305-2717. The examiner can normally be reached on Monday-Friday 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3329.

LA  
February 3, 2003

  
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